DYNAMIC COMPILATION CONTROL TECHNIQUE

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ABSTRACT OF THE DISCLOSURE

[1097] Modern programming languages have stimulated work on systems that dynamically compile or optimize frequently executed portions of programs. In practice, such systems typically rely on ad hoc heuristics. For example, a system may optimize (or compile) some code once its execution count exceeds a given threshold. An analytical model has been developed that expresses performance of such a system. In one embodiment, the model is based on a bytecode frequency histogram, which indicates (for a given program) how many bytecodes run for how many times. It predicts that the optimal compilation threshold will occur where the hazard rate falls through the reciprocal of the break-even point, the number of times a compiled bytecode must be executed to recoup its compilation time. Based on the insight provided by the model, a dynamic compilation control technique has been developed.